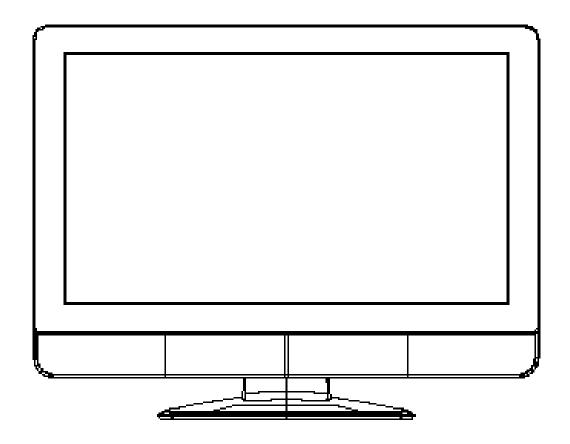
Service Manual



Model #: VO37L FHDTV20A_ MT5381 _De Base_AUO_ T370HW02_VB

V, Inc

320A Kalmus Drive Costa Mesa, CA 92626 TEL: +714-668-0588 FAX:+714-668-9099

Table of Contents

CONTENTS	PAGE
Sections	
1. Features	1-1
2. Specifications	2-1
3. On Screen Display	3-1
4. Factory Preset Timings	4-1
5. Pin Assignment	5-1
6. Main Board I/O Connections	6-1
7. Theory of Circuit Operation	7-1
8. Waveforms	8-1
9. Trouble Shooting	9-1
10. Block Diagram	10-1
11. Complete Parts List	11-1
Appendix	
1 Main Board Circuit Diagram	

- 1. Main Board Circuit Diagram
- 2. Main Board PCB Layout
- 3. Assembly Explosion Drawing

COPYRIGHT ©2000 V, INC. ALL RIGHTS RESERVED.

IBM and IBM products are registered trademarks of International Business Machines Corporation.

Macintosh and Power Macintosh are registered trademarks of Apple Computer, Inc.

VINC and VINC products are registered trademarks of V, Inc.

VESA, EDID, DPMS and DDC are registered trademarks of Video Electronics Standards Association (VESA).

Energy Star is a registered trademark of the US Environmental Protection Agency (EPA).

No part of this document may be copied, reproduced or transmitted by any means for any purpose without prior written permission from VINC.

FCC INFORMATION

This equipment has been tested and found to comply with the limits of a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy, and if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that the interference will not occur in a particular installation. If this equipment does cause unacceptable interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures -- reorient or relocate the receiving antenna; increase the separation between equipment and receiver; or connect the into an outlet on a circuit different from that to which the receiver is connected.

FCC WARNING

To assure continued FCC compliance, the user must use a grounded power supply cord and the provided shielded video interface cable with bonded ferrite cores. Also, any unauthorized changes or modifications to Amtrak products will void the user's authority to operate this device. Thus VINC Will not be held responsible for the product and its safety.

CE CERTIFICATION

This device complies with the requirements of the EEC directive 89/336/EEC with regard to "Electromagnetic compatibility."

SAFETY CAUTION

Use a power cable that is properly grounded. Always use the AC cords as follows – USA (UL); Canada (CSA); Germany (VDE); Switzerland (SEV); Britain (BASEC/BS); Japan (Electric Appliance Control Act); or an AC cord that meets the local safety standards.

Chapter 1 Features

- 1. Built in TV channel selector for TV viewing.
- 2. Simulatnueous display of PC and TV images.
- 3. Connectable to PC's analog RGB port.
- 4. Built in S-video, HDTV, composite video, HDMI and TV out.
- 5. Built in auto adjust function for automatic adjument of screen display.
- 6. Smoothing function enables display of smooth texts and graphics even if image withresolution lower than 1920x1080 is magnified.
- 7. Advanced video functions for personal favor.
- 8. Power saving to reduce consumption power too less than 1W.
- 9. On Screen Display: user can define display mode (i.e. color, brightness, contrast, sharpness, backlight), sound setting, TV channel program, aspect and gamma or reset all setting.

Chapter 2 Specification

1. TFT-LCD Characteristics

Model Name: AUO T370HW02 VB

Size: 3701inch

Display Size: 37.02 inches

Outline Dimension: 877.0 mm (H) x 514 mm (V) x 54.3 mm (D) (Typ.)

Pixel Pitch: 0.426mm x 0.426mm x RGB

Pixel Format 1366 horiz. By 768 vert. Pixels RGB strip arrangement

Display Operating Mode: Transmissive mode, normally Black

Surface Treatment: Hard Coating (3H), Anti-glare treatment of the front

polarizer.

2. TFT-LCD Optical Characteristics

Contrast ratio :CR : 3000(Typ)

Surface Luminance, White: 500 cd/m2 (Typ)

Luminance Variation, d=1.3 (Max)

Response Time =6.5 ms (Max=8ms)

Viewing Angle (CR>10)

Left: 89° typ.

Right: 89° typ.

Top: 89°typ.

Bottom: 89°typ.

3. Input Connectors

Video Inputs

1x RF (Combo, F Connector for internal NTSC /ATSC/QAM Tuner)

3x HDMI with HDCP plus Stereo Analog Audio

2x Component YPbPr plus Stereo Audio

2x Composite Video plus Stereo Audio

1x S-Video plus Stereo Audio

1x Analog RGB plus Stereo Audio

4 x Stereo RCA Jack (R/L), 1 x PC Mini-Jack

USB firmware update

Audio Input

1x Stereo Audio (RCA)

1x PC mini jack

4. Power Supply

Input Voltage Level: 120 Vac, 50/60 Hz

Power Consumption: 195W MAXPower OFF: to less than 1W MAX

5. Speaker

Output 12W (max) X2

6. Environment

Operating Temperature: 5c~35c (Ambient)

Operating Humidity: Ta= 35 °C, 90%RH (Non-condensing)
Operating Altitude: 0 - 14,000 feet (4267.2m)(Non-Operating)

7. Dimensions (Physical dimension)

Width: 877 mm. +/- 20 mm Depth: 55.5 mm +/- 20 mm Height: 516.8 mm +/- 20 mm

8. Weight (Physical weight)

Net: 19.12 Gross: 23.81

Precaution

Please pay attention to the followings when you use this TFT LCD module.

1. Operating Precautions

- (1) The spike noise causes the mis-operation of circuits. It should be lower than following voltage:
 - V=±200mV(Over and under shoot voltage)
- (2) Response time depends on the temperature. (In lower temperature, it becomes longer.)
- (3) Brightness depends on the temperature. (In lower temperature, it becomes lower.) And in lower temperature, response time (required time that brightness is stable after turned on) becomes longer.

- (4) Be careful for condensation at sudden temperature change. Condensation makes damage to polarizer or electrical contacted parts. And after fading condensation, smear or spot will occur.
- (5) When fixed patterns are displayed for a long time, remnant image is likely to occur.
- (6) Module has high frequency circuits. System manufacturers shall do sufficient suppression to the electromagnetic interference. Grounding and shielding methods may be important to minimize the interference.

2. Handling Precautions For Protection

- (1) The protection film is attached to the bezel with a small masking tape. When the protection film is peeled off, static electricity is generated between the film and polarizer. This should be peeled off slowly and carefully by people who are electrically grounded and with well ion-blown equipment or in such a condition, etc.
- (2) When the module with protection film attached is stored for a long time, sometimes there remains a very small amount of glue still on the bezel after the protection film is peeled off.
- (3) You can remove the glue easily. When the glue remains on the bezel surface or its vestige is recognized, please wipe them off with absorbent cotton waste or other soft material like chamois soaked with normal-hexane.

Chapter 3 On Screen Display

On Screen Display (OSD) is a friendly interface providing the function adjusting in our system. Customers could operate it only by few buttons. There is the introduction of the OSD.

Main unit button

MENU	OK
CH?	?
CH?	?
VOL+	?
VOL -	?
Input	

[MENU]

"MENU" button could star the OSD which could adjust the performance and set up the setting between the different input sources. There are the structures.

TV Source

A. PICTURE ADJUST:

- a. PICTURE MODE
 (CUSTOM/STANDARD/MOVIE/GAME/VIVID/FOOTBALL/GOLF/BASKETBALL/BASEB ALL)
- b. BACKLIGHT (0~100)
- c. BRIGHTNESS (0~100)
- d. ONTRAST (0~100)
- e. COLOR (0~100)
- f. TINT (-32~+32)
- g. SHARPNESS (0~7)
- h. ADVANCED VIDEO
- i. RESET PICTURE MODE

Operation Menu

Picture Picture Picture Picture Custom Picture Outlook Brightness Contrast Color Tint Sharpness Advanced Video Reset Picture Mode TV Great Select Sele

A. PICTURE ADJUST:

- a. PICTURE MODE
 (CUSTOM/STANDARD/
 MOVIE/GAME/VIVID/FOOTBALL/GOLF/
 BASKETBALL/BASEBALL)
- b. BACKLIGHT (0~100)
- c. BRIGHTNESS (0~100)
- d. CONTRAST (0~100)
- e. COLOR (0~100)
- f. TINT (-32~+32)
- g. SHARPNESS (0~7)
- h. ADVANCED VIDEO
- i. RESET PICTURE MODE



B. AUDIO ADJUST:

- a. AUDIO Mode

 (FLAT/ROCK/POP/CLASSIC/JAZZ)
- b. EQUALIZER
- c. BALANCE (-50~+50)
- d. SRS TSXT (ON/OFF)
- e. DIGITAL AUDIO OUT (PCM/OFF/DOBLY DIGITAL)
- f. SPEAKERS (ON/OFF)
- g. ANALOG AUDIO OUT (FIXED/VARIABLE)
- h. LIP SYNC(0~5)
- i. RESET AUDIO MODE



C. TV: ATV

- a. TUNER MODE(ANTENNA/CABLE)
- b. AUTO SEARCH
- c. PARTIAL CHANNEL SEARCH
- d. SKIP CHANNEL
- e. MTS(STEREO/SAP/MONO)
- f. TIME ZONE

 (EASTERN/ATLANTIC/INDIANA/

 CENTRAL/MOUNTAIN/ARIZONA/NEWF

 OUNDLAND/PACIFIC/ALASKA/ HAWAII)
- g. DAYLIGHT SAVING(ON/OFF)



D. TV: DTV

- a. TUNER MODE(ANTENNA/CABLE)
- b. AUTO SEARCH
- c. PARTIAL CHANNEL SEARCH
- d. SKIP CHANNEL
- e. MTS(LANGUAGE1/LANGUAGE2/LANGUAGE3)
- f. TIME ZONE

 (EASTERN/ATLANTIC/INDIANA/

 CENTRAL/MOUNTAIN/ARIZONA/NEWF

 OUNDLAND/PACIFIC/ALASKA/HAWAII)
- g. DAYLIGHT SAVING(ON/OFF)



E. SETUP: (ATV only)

- a. LANGUAGE (ENGLISH/FRANCAIS/ ESPANOL)
- b. SLEEP TIMER(OFF/30 MINUTES/60 MINUTES/90 MINUTES/120 MINUTES)
- c. WIDE(WIDE/PANORAMIC/NORMAL)
- d. INPUT NAMING
- e. CC(CC/DIGITAL CC STYLE)
- f. H/V POSITION

(H-POSITION/V-POSITION/ H-SIZE/V-SIZE) g. PARENTAL h. SYSTEM RESET Setup F. SETUP: (DTV only) a. LANGUAGE (ENGLISH/FRANCAIS/ ESPANOL) b. SLEEP TIMER(OFF/30 MINUTES/60 MINUTES/90 MINUTES/120 MINUTES) c. WIDE(WIDE/PANORAMIC/NORMAL) Enter 1979 Select (LAST) Back d. INPUT NAMING e. CC(CC/DIGITAL CC STYLE) f. H/V POSITION (H-POSITION/V-POSITION/ H-SIZE/V-SIZE) g. PARENTAL h. SYSTEM RESET G. PARENTAL: (ATV & DTV) Parental a. CHANNEL BLOCK b. US TV RATING c. US MOVIE RATING d. CANADIAN ENGLISH RATING e. CANADIAN FRENCH RATING (e) Select MINU Back f. DTV RATING g. BLOCK UNRATED TV (YES/NO)

h. ACCESS CODE EDIT



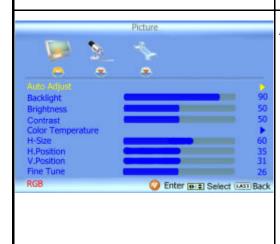
- H. ADVANCED VIDEO: (ATV & DTV)
 - a. NOISE REDUCTION (LOW/ MEDIUM/ STRONG/OFF)
 - b. COLOR ENHANCEMENT(NORMAL/RICH COLOR/GREEN FLESH/GREEN BLUE/OFF)
 - c. ADVANCED ADAPTIVE LUMA(LOW/MEDIUM/STRONG/EXTEND/OFF)
 - d. ENHANCED CONTRAST RATIO (OFF/ON)
 - e. COLOR TEMPERATURE



I. DTV RATING

- → U.S. (50 STATES + POSSESSIONS):
- a. ENTIRE AUDIENCE
- b. DIALOGUE
- c. LANGUAGE
- d. SEX
- e. VIOLENCE
- f. CHILDREN
- g. FANTASY VIOLENCE
- h. MPAA

RGB



A. PICTURE ADJUST:

- a. AUTO ADJUST
- b. BACKLIGHT (0~100)
- c. BRIGHTNESS (0~100)
- d. CONTRAST (0~100)
- e. COLOR TEMPERATURE (9300/6500/CUSTOM)
- f. H-SIZE (0~255)
- g. H.POSITION (0~100)

h. V.POSITION (0~100)

i. FINE TUNE (0~31)

Audio Balance Balance Balance Balance On On On On On Analog Audio Out Analog Audio Out Lip Sync Reset Audio Mode RGB Audio Audio Audio Audio Balance On Analog Audio Audio Audio Audio Balance Audio Audio Balance Balance Audio Audio Balance Balance Audio Audio Balance Balance Balance Audio Balance Balan

B. AUDIO ADJUST:

- a. AUDIO Mode

 (FLAT/ROCK/POP/CLASSIC/JAZZ/)
- b. EQUALIZER
- c. BALANCE (-50~+50)
- d. SRS TSXT (ON/OFF)
- e. DIGITAL AUDIO OUT (PCM/OFF/DOBLY DIGITAL)
- f. SPEAKERS (ON/OFF)
- g. ANALOG AUDIO OUT (FIXED/VARIABLE)
- h. LIP SYNC(0~5)
- i. RESET AUDIO MODE



C. SETUP:

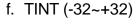
- a. LANGUAGE (ENGLISH/FRANCAIS/ ESPANOL)
- b. SLEEP TIMER(OFF/30 MINUTES/60 MINUTES/90 MINUTES/120 MINUTES)
- c. WIDE(WIDE/PANORAMIC/NORMAL)
- d. INPUT NAMING
- e. SYSTEM RESET

HDMI MODE

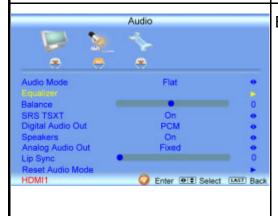


A. PICTURE ADJUST:

- a. PICTURE MODE (CUSTOM/STANDARD/ MOVIE/GAME/VIVID/FOOTBALL/GOLF/B ASKETBALL/BASEBALL)
- b. BACKLIGHT (0~100)
- c. BRIGHTNESS (0~100)
- d. ONTRAST (0~100)
- e. COLOR (0~100)



- g. SHARPNESS (0~7)
- h. ADVANCED VIDEO
- i. RESET PICTURE MODE



B. AUDIO ADJUST:

- a. AUDIO Mode

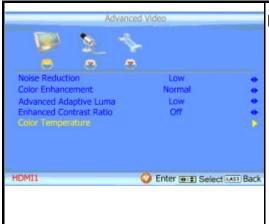
 (FLAT/ROCK/POP/CLASSIC/JAZZ/)
- b. EQUALIZER
- c. BALANCE (-50~+50)
- d. SRS TSXT (ON/OFF)
- e. DIGITAL AUDIO OUT (PCM/OFF/DOBLY DIGITAL)
- f. SPEAKERS (ON/OFF)
- g. ANALOG AUDIO OUT (FIXED/VARIABLE)
- h. LIP SYNC(0~5)
- i. RESET AUDIO MODE



C. SETUP:

- a. LANGUAGE (ENGLISH/FRANCAIS/ ESPANOL)
- b. SLEEP TIMER(OFF/30 MINUTES/60 MINUTES/90 MINUTES/120 MINUTES)
- c. WIDE(WIDE/PANORAMIC/NORMAL)
- d. INPUT NAMING
- e. H/V POSITION

 (H-POSITION/V-POSITION/
 H-SIZE/V-SIZE)
- f. SYSTEM RESET



D. ADVANCED VIDEO:

- a. NOISE REDUCTION (LOW/ MEDIUM/ STRONG/OFF)
- b. COLOR ENHANCEMENT(NORMAL/RICH COLOR/GREEN FLESH/GREEN BLUE/OFF)
- c. ADVANCED ADAPTIVE LUMA(LOW/MEDIUM/STRONG/EXTEND/OFF)
- d. ENHANCED CONTRAST RATIO (OFF/ON)
- e. COLOR TEMPERATURE

VIDEO MODE



A. PICTURE ADJUST:

- a. PICTURE MODE (CUSTOM/STANDARD/ MOVIE/GAME/VIVID/FOOTBALL/GOLF/B ASKETBALL/BASEBALL)
- b. BACKLIGHT (0~100)
- c. BRIGHTNESS (0~100)
- d. CONTRAST (0~100)
- e. COLOR (0~100)
- f. TINT (-32~+32)
- g. SHARPNESS (0~7)
- h. ADVANCED VIDEO
- i. RESET PICTURE MODE



B. AUDIO ADJUST:

a. AUDIO

Mode(FLAT/ROCK/POP/CLASSIC/

JAZZ/)

- b. EQUALIZER
- c. BALANCE (-50~+50)
- d. SRS TSXT (ON/OFF)

- e. DIGITAL AUDIO OUT (PCM/OFF/DOBLY DIGITAL)
- f. SPEAKERS (ON/OFF)
- g. ANALOG AUDIO OUT (FIXED/VARIABLE)
- h. LIP SYNC(0~5)
- i. RESET AUDIO MODE



C. SETUP:

- a. LANGUAGE
 (ENGLISH/FRANCAIS/ESPANOL)
- b. SLEEP TIMER(OFF/30 MINUTES/60 MINUTES/90 MINUTES/120 MINUTES)
- c. WIDE(WIDE/PANORAMIC/NORMAL)
- d. INPUT NAMING
- e. CC(CC/DIGITAL CC STYLE)
- f. H/V POSITION(H-POSITION/V-POSITION/ H-SIZE/V-SIZE)
- g. PARENTAL
- h. SYSTEM RESET



D. PARENTAL CONTROL:

- a. CHANNEL BLOCK
- b. US TV RATING
- c. US MOVIE RATING
- d. CANADIAN ENGLISH RATING
- e. CANADIAN FRENCH RATING
- f. DTV RATING
- g. BLOCK UNRATED TV(YES/NO)
- h. ACCESS CODE EDIT

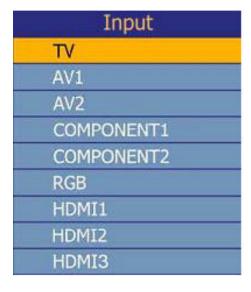


E. ADVANCED VIDEO:

- a. NOISE REDUCTION (LOW/ MEDIUM/ STRONG/OFF)
- b. COLOR ENHANCEMENT(NORMAL/RICH COLOR/GREEN FLESH/GREEN BLUE/OFF)
- c. ADVANCED ADAPTIVE LUMA(LOW/MEDIUM/STRONG/EXTEND/OFF)
- d. ENHANCED CONTRAST RATIO (OFF/ON)
- e. COLOR TEMPERATURE

[INPUT]

"INPUT" could supply an interface providing a list. The list shows input sources and provides the choices of different sources. The list includes items as below:



- A. TV: Analog TV or digital TV
- B. AV1, AV2: Composite (AV) signal
- C. Component1, Component2: Color difference (YPbPr) video signals.
- D. RGB: Video Graphics Array (VGA) or D-sub video signals.
- E. HDMI1, HDMI2, HDMI3: High Definition Multimedia Interface (HDMI) multimedia signals.

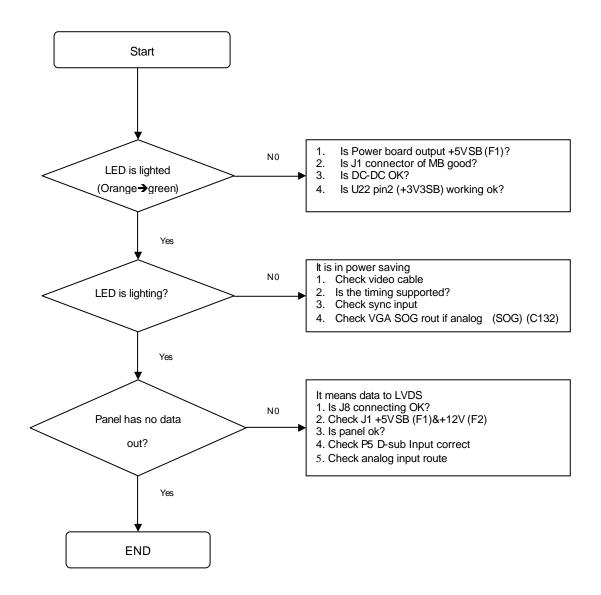
[INFO]

"INFO" button could show an information bar which displays the information about the input signal on our LCD TV.

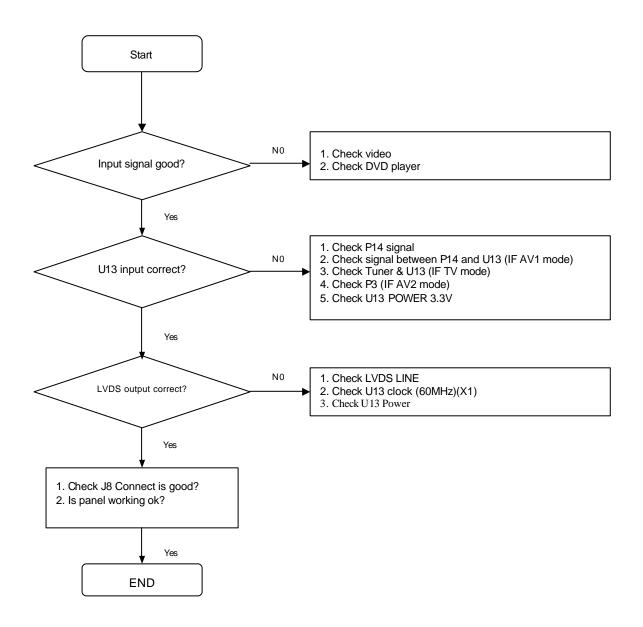


Chapter 9 Trouble shooting

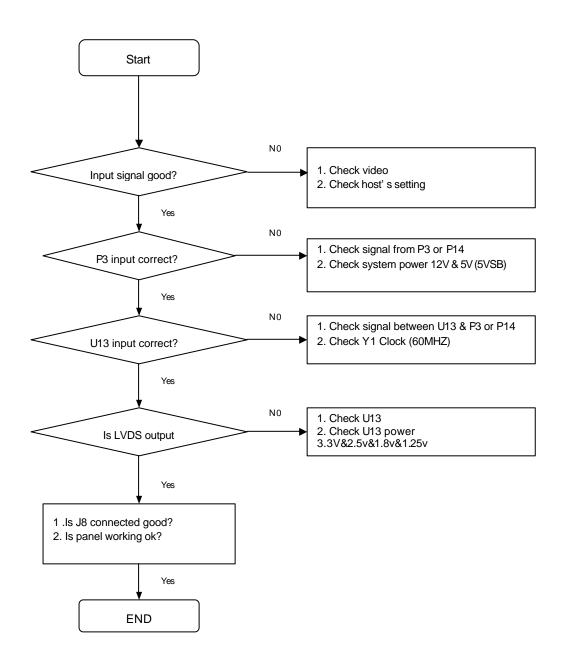
MONITOR DISPLAY NOTHING (PC MODE)



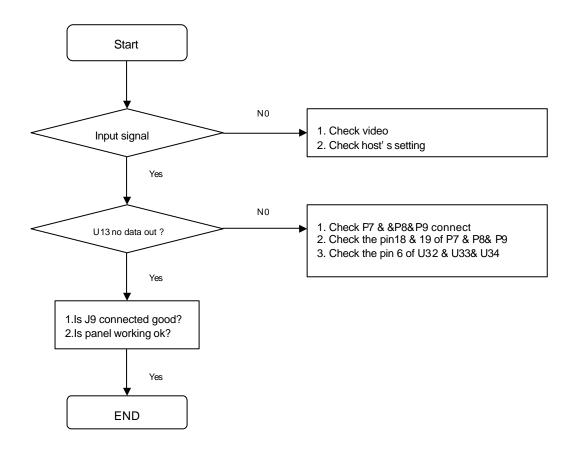
(TV, COMPOSITE VIDEO1, 2, S-VIDEO) IS NOT DISPLAY CORRECTLY



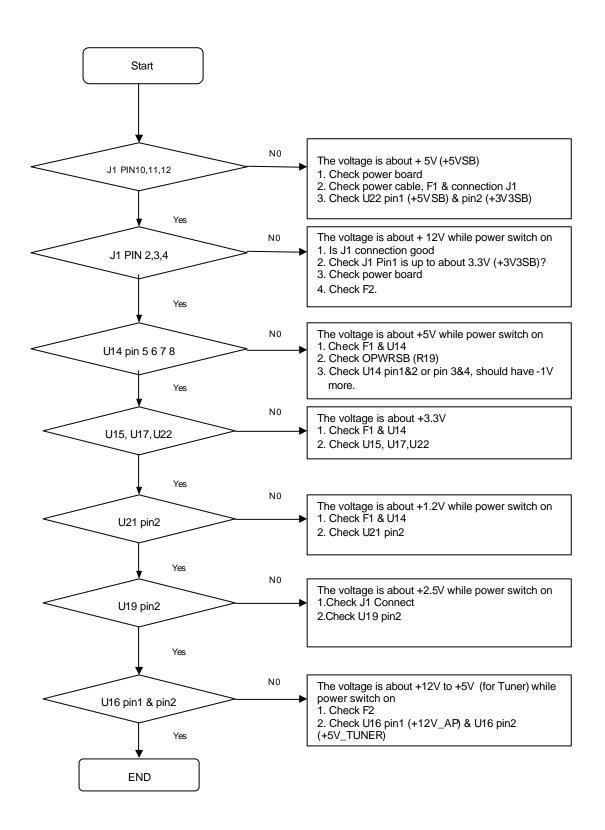
(COMPONENT1, 2) IS NOT DISPLAY CORRECTLY



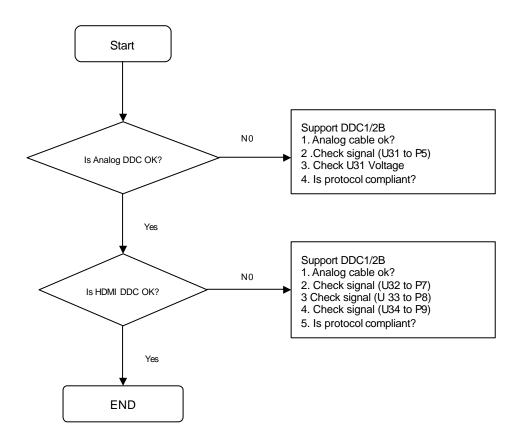
(HDMI) IS NOT DISPLAY CORRECTLY



TROUBLE OF DC-DC CONVERTER



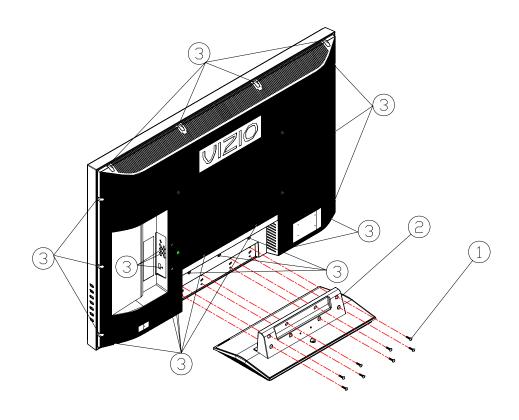
TROUBLE OF EDID READING

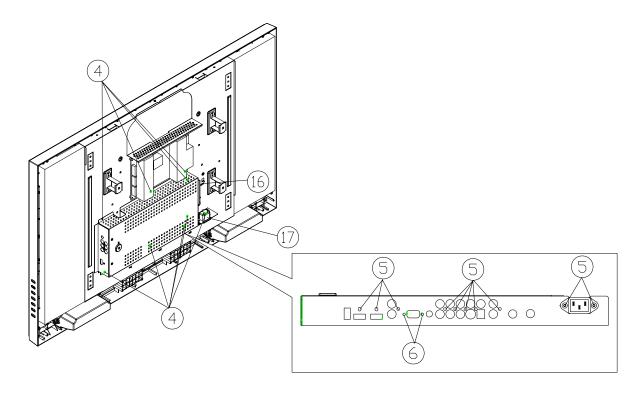


1.REAR COVER ASS'Y /CONNECTOR BD ASS'Y REMOVAL

Note: Spread a mat underneath to avoid damaging the TV surface.

- 1) Remove eight screws ① from Base Ass'y ② .
- 2) Separate the Base Ass'y 2.
- 3) Remove twenty_foure screws ③ from rear cover.
- 4) Separate the rear cover.
- 5) Remove nine screws ④,two hexagon screws ⑥,ten screws ⑤ from Shielding.
- 6) Remove one screw 16 from Chassis.
- 7) Separate the shielding and AC IN Power 17.





2. POWER BD ASS'Y REMOVAL

- 1) Remove the connector (9) (CN4) of the inverter cable.
- 2) Remove the connector (8) (CN2) of the Main cable.
- 3) Remove the connector \bigcirc (CN1) of the power cable 1.
- 4) Remove four screws 10 from Power BD ASS'Y .
- 5) Separate the Power BD ASS'Y.

3. MAIN BD ASS'Y REMOVAL

- 1) Remove the connector (1) (J4) of the speaker cable.
- 2) Remove the connector 12 (J1) of the Power cable.
- 3) Remove the connector (3)(J3) of the LVDS cable.
- 4) Remove the connector (4) (J2) of the Keypad cable.
- 5) Remove six screws (5) from MAIN BD .
- 6) Separate the MAIN BD.

